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ABSTRACT

This study examined the annual output of Ph.D. degrees in agricultural economics and the types of employment taken by graduates in the field. Data were obtained from 35 institutions for the period 1985 through 1994, and for 7 of the 10 years, from two additional institutions. It was found that the 37 institutions accounted for a total of 1,745 Ph.D. degrees in agricultural economics between 1985 and 1994, with a slight downward trend in degrees produced between 1985 and 1992, but then noticeable increases in both 1993 and 1994. The ten institutions with the largest number of Ph.D. degrees accounted for 45 percent of total output. Fewer than one-third of the individuals who received Ph.D. degrees between 1985 and 1994 belonged to the American Agricultural Economics Association (AAEA) in 1995. Approximately 90 percent of degree recipients who were members of the AAEA in 1995 and residing in the United States were employed by an academic institution or government agency. The results indicate that the number of Ph.D. degrees in agricultural economics has not shown any dramatic growth or decline over the last couple of decades. (Contains 12 references.) (MDM)

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Output, Professional Affiliation, and Placement of Ph.D. Graduates in Agricultural Economics

R.A. Schrimper

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NC STATE UNIVERSITY

Output, Professional Affiliation, and Placement of Ph.D. Graduates in Agricultural Economics

R.A. Schrimper

ARE Report No. 16
November, 1998

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Output, Professional Affiliation, and Placement of Ph.D. Graduates in Agricultural Economics

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ARE Report No. 16 - October 1998
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[a]The excellent assistance of Billy Daniel and Wen Ji in compiling the basic data and preparing various statistical tabulations used for this analysis is gratefully acknowledged. Also, comments of Jon Brandt, Michelle Marra, Wally Thurman and Mike Wohlgenant on earlier drafts of this manuscript were very helpful.

There has been much discussion and concern about the likely effects of reductions in financial support for agricultural economics at several universities and the USDA. Conner noted that the nineties was a time of major change for agricultural economics departments with budget cuts, downsizing and consolidation of programs. Buse reported that membership in the American Agricultural Economics Association (AAEA) declined by 1000 between 1990 and 1996 with nearly 70 percent of the decrease being regular U. S. members. On the other hand, Marchant and Zepeda reported an increase in the total number of faculty positions based on responses from agricultural economics departments in the U. S. and Canada to surveys from the AAEA Employment Services Committee. The increase in the number of faculty members and a doubling in the number of Ph.D. students per department were some of the surprising findings from these surveys noted by Thompson. These results were apparently also a surprise to Marchant and Zepeda as indicated by the following sentence, "Given the pervasive perception of budgetary cutbacks, it is surprising that we have not found downsizing of agricultural economics departments in terms of faculty numbers and limited hiring" (page 1327). Even though their data were based on about 50 percent of the institutions contacted, some of the comparisons about graduate programs may have been affected by changes in the mix of schools that responded to the different surveys. For example, Ph.D. output for some departments like Iowa State, Michigan State, Illinois, and the University of California at Davis was apparently not consistently reported for all years.

Purposes

One of the purposes of this paper is to analyze the annual output of Ph.D. degrees in agricultural economics from an identical set of U. S. institutions since 1985 to see if output really doubled. This aspect of the study also provides an update of tabulations and comparisons to the

output of Ph.D. degrees in agricultural economics for earlier periods reported by Nichols, Schrimper (1981 and 1985), and Nelson. Nelson's unpublished presidential address to the Western Agricultural Economics Association summarized the number of Ph.D. recipients for three, three-year periods beyond the years reported by Schrimper (1985). Data for the last year of Nelson's tabulations was based on projected rather than actual number of degrees granted.[1]

Another objective of the analysis was to determine if some of the decrease in AAEA membership was the result of a decline in interest among recent Ph.D. graduates. Of particular interest was determining if the rate of AAEA membership varied among recent Ph.D. cohorts. This kind of information might be useful for designing new approaches to try to reverse the trend in AAEA membership.

A final objective was to examine the types of employment taken by new Ph.D. graduates in agricultural economics based on information included in the 1995 AAEA Membership Directory. Of particular interest was to see if the share of new Ph.D. recipients employed by academic or governmental agencies over the last decade had changed in response to perceived downsizing at some universities and the USDA. Aggregate information about placement of Ph.D. graduates in agricultural economics to analyze these kind of issues is very limited as noted by Nelson. Surveys by Brandt and Ahearn as well as data summarized by Zepeda and Marchant provide employment measures for particular points in time, but not much information about changes over time.

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[1]In retrospect, it appears that the projections of output for 1992 included in Nelson's tabulations were quite accurate. This is in sharp contrast to expected Ph.D. output for 1984-86 based on a mail survey of 40 departments reported by Erven that was more than 70 percent higher than what actually occurred.

Data and Methods

Much of the basic information for the tabulations and analysis reported in this paper originates with the lists of Ph.D. degrees included in May issues of the American Journal of Agricultural Economics (AJAE). These lists include names of individuals who completed a Ph.D. during the previous year in agricultural economics as defined by various U.S. universities. The use of the AJAE lists avoids an explicit definition of what the field of agricultural economics encompasses. Consequently the field is defined implicitly by individuals reporting appropriate information for each institution. Information for particular years that were not included in the AJAE lists was obtained by contacting individuals at several institutions.[2] This effort resulted in a complete set of data about Ph.D. output for 1985 to 1994 for 35 institutions and seven of the ten years for two additional institutions. The 37 institutions are basically the same group included in earlier tabulations by Schrimper (1981 and 1985), but a few differences exist because of the availability, or lack thereof, of relevant information. For example, information for Auburn and Texas Tech are included in the new tabulations, but five institutions (Chicago, LSU, Arizona, Idaho and Montana State) that were included in earlier tabulations are excluded in this report. This change in composition of institutions should have minimal effect on comparability of data however because the latter five institutions accounted for less than 3 percent of the total Ph.D. degrees in 1981-83.

The 1995 AAEA membership directory was used to determine how many of the individuals who received a Ph.D. from one of the 37 schools between 1985 to 1994 were

[2]Missing information was requested from institutions that reported one or more graduates in the AJAE for at least five of the years between 1985 and 1994.

members of the AAEA. The directory also was used to determine how many of the Ph.D. graduates during that period were residing in the U. S. and how many were located in other countries in 1995. A separate tabulation of different kinds of employment reported by the graduates located in the U. S. was developed to examine what, if any, job market changes had occurred for graduates during that decade. Differences in graduate placement patterns for some of the institutions with the largest number of graduates hired by academic institutions are also analyzed.

Results

The following three sections present information about the number of Ph.D. degrees in agricultural economics, the extent of their membership in the AAEA, and the location and employment characteristics of those who were members of the AAEA in 1995.

Ph.D. Output. The 37 departments included in this analysis accounted for a total of 1745 Ph.D degrees in agricultural economics between 1985 and 1994 (Table 1).[3] The data indicate some cyclical behavior in the number of Ph.D. degrees granted over the decade with a slight downward trend between 1985 and 1992, but then noticeable increases in both 1993 and 1994. The lowest annual output occurred in 1987 when only 148 degrees were awarded. The largest output of 217 degrees occurred in 1994.

[3]Institutions are listed within each region according to the total number of Ph.D. degrees granted between 1985 and 1994.

Table 1. Number of Ph.D. degrees granted in agricultural economics by year and percent AAEA members in 1995.*

Region/School	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	Totals	% AAEA
Northeast	**13**	**20**	**15**	**14**	**18**	**18**	**22**	**19**	**17**	**23**	**179**	**0.31**
Cornell	7	9	8	8	13	8	13	4	10	5	86	0.31
Maryland	1	4	1	3	1	1	1	3	2	2	19	0.58
Rhode Island	-	-	2	3	-	2	3	6	1	2	19	0.21
Connecticut	0	3	1	0	0	1	2	2	2	4	15	0.33
Penn State	3	0	1	0	1	4	2	0	0	7	18	0.44
Massachusetts	1	3	1	0	1	1	1	2	2	1	13	0.00
Yale	1	1	1	-	2	1	-	2	-	1	9	0.00
North Central	73	70	46	64	72	71	56	51	65	82	650	0.36
Iowa State	9	18	11	11	14	12	9	14	15	17	130	0.33
Minnesota	10	9	7	11	8	18	11	6	10	8	98	0.41
Michigan State	13	7	6	10	13	6	5	8	3	14	85	0.41
Illinois	8	11	8	9	9	6	8	7	8	5	77	0.42
Purdue	3	10	4	10	6	14	6	3	7	12	75	0.39
Ohio State	4	3	2	7	6	8	11	3	13	11	68	0.34
Wisconsin	8	7	4	5	6	3	3	6	6	6	54	0.35
Missouri	8	4	2	0	3	3	4	1	1	6	32	0.25
Nebraska	4	1	1	0	5	1	1	1	1	1	16	0.06
Kansas State	6	0	1	1	2	0	0	2	1	2	15	0.20
South	**50**	**49**	**47**	**50**	**53**	**42**	**45**	**47**	**56**	**68**	**507**	**0.26**
Texas A&M	9	9	11	4	13	5	14	7	9	14	95	0.38
Oklahoma State	10	9	8	8	7	7	5	5	11	9	79	0.14
NCSU	8	5	9	4	7	4	6	7	6	12	68	0.38
Florida	6	2	3	6	3	5	2	4	10	3	44	0.32
Mississippi State	3	3	1	7	2	5	1	4	5	10	41	0.17
VPI	4	7	4	3	3	5	4	5	1	2	38	0.32
Kentucky	6	5	1	3	3	5	1	3	5	5	37	0.19
Georgia	2	4	2	4	6	1	2	2	1	7	31	0.16
Clemson	0	3	3	5	1	4	2	4	0	1	23	0.17
Tennessee	2	1	2	2	3	0	5	4	0	1	20	0.20
Auburn	0	1	2	1	3	1	2	0	5	- 3	18	0.28
Texas Tech	0	0	1	3	2	0	1	2	3	1	13	0.23
West	**54**	**42**	**40**	**39**	**36**	**38**	**44**	**36**	**36**	**44**	**409**	**0.34**
Berkeley	7	9	4	10	7	8	14	11	6	13	89	0.44
Davis	3	7	9	6	7	6	10	1	8	12	69	0.52
Stanford	8	6	7	5	3	6	5	8	5	5	58	0.28
Washington State	4	6	6	4	3	9	4	6	5	3	50	0.28
Oregon State	11	6	5	4	2	3	5	4	3	3	46	0.35
Hawaii	7	5	7	6	7	1	2	1	2	2	40	0.08
Colorado State	6	1	2	3	3	5	1	2	6	3	32	0.31
Utah State	8	2	0	1	4	0	3	3	1	3	25	0.12
US Total	**190**	**181**	**148**	**167**	**179**	**169**	**167**	**153**	**174**	**217**	**1745**	
% AAEA members	0.30	0.30	0.28	0.34	0.34	0.36	0.34	0.34	0.31	0.31	0.32	

Missing cells identified by -

Sources: Listings in May issues of AJAE, correspondence with several individuals, listings in 1995 AAEA Directory.

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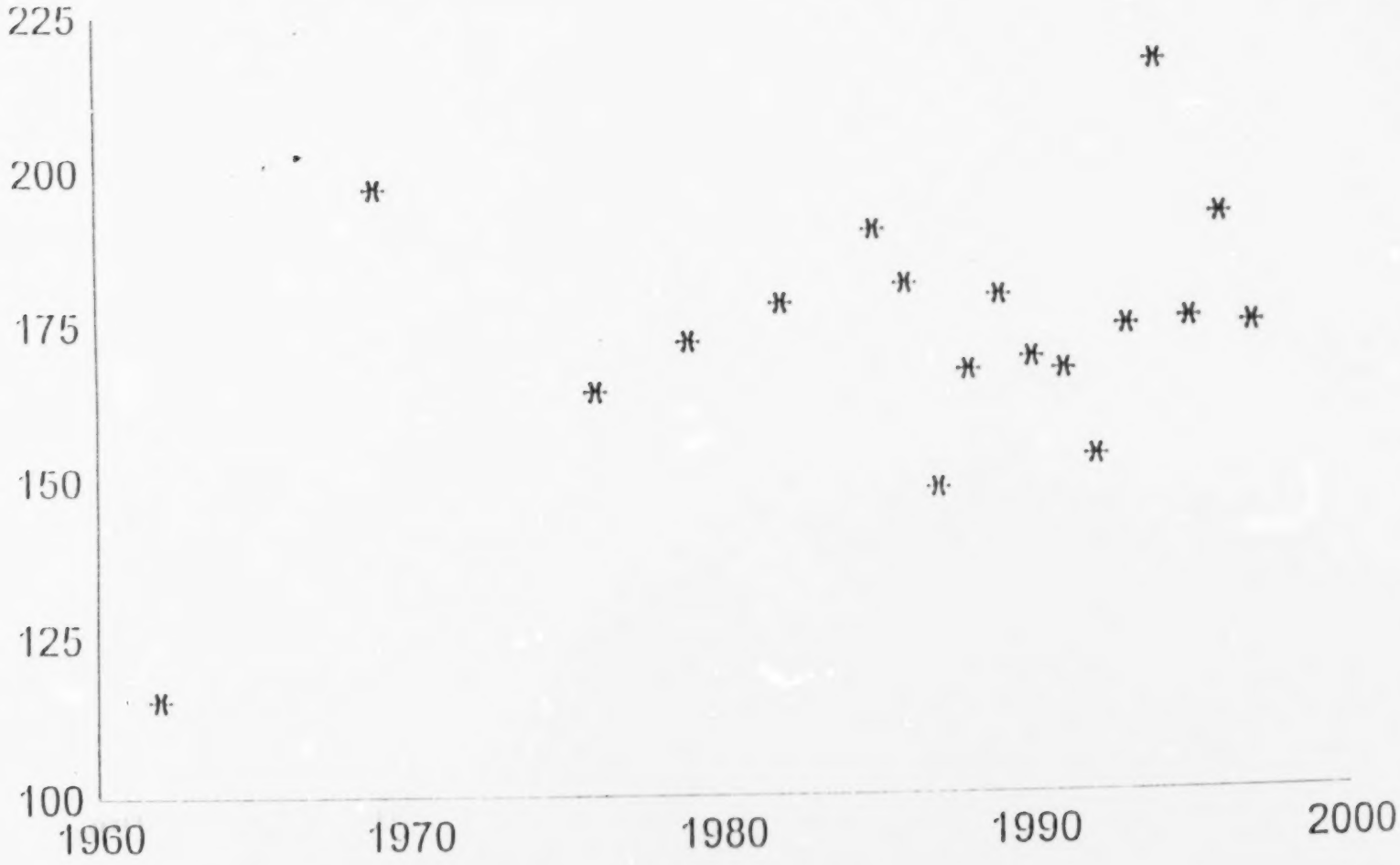
Figure 1. Number of Ph.D. Degrees Granted in Agricultural Economics, 1962- 1997.



An annual rate of approximately 175 Ph.D. degrees in agricultural economics during 1985-1994 is about the same rate of output as occurred during 1978-1981 (Figure 1).[4] It is just a little under the rate of output during 1981-1983. For most of the 1970's, 1980's, and early 1990's the number of new Ph.D. graduates in agricultural economics was less than that of the late 1960's. The one exception appears to be 1994. The number of degrees awarded in 1995, 1996 and 1997, however, appear to be more like those for most of the previous decade other than 1994.[5]

The data for 1985-1994, as well as that for selected earlier periods represented in Figure 1 provide some evidence of an upward trend in the total number of Ph.D. degrees. However if one ignores the expansion in Ph.D. output that occurred during the 1960's and the unusually large number of degrees in 1994, the output of Ph.D. degrees in agricultural economics for the last couple of decades appears to have been relatively flat. The data clearly do not suggest a continuing downward trend since 1975 that Brandt and Ahearn observed in National Research Council (NRC) data.[6]

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[4]Annual output is plotted for each year after 1984. For earlier periods, the average number of degrees for various three-year periods reported by Schrimper (1981 and 1985) are plotted at the mid year of the period.

[5]The number of Ph.D. graduates was 171 for 35 reporting institutions in 1995, 165 for 30 reporting institutions in 1996 and 145 for 31 reporting institutions in 1997. If the nonreporting institutions for 1995-1997 had the same output as they reported for 1994, the total number of Ph.D. degrees would be 175 in 1995, 192 for 1996 and 174 in 1997 which indicate substantially fewer degrees than in 1994.

[6]Different trends from the two sources of data may result from variation in NRC response rates or how respondents define degrees in agricultural economics. For example, the NRC data are generally smaller than the numbers in Table 1. For eight of the nine years between 1986 and 1994, NRC numbers are 6.1 to 25.3 percent under the number of degrees in Table 1. The one exception is for 1991 when the two sources of data differ by only one degree.

It is not possible to determine how much of the variation in the total number of degrees in Table 1 is attributable to changes in the proportion of international students. The reason this is not possible is because of a change in the amount of information about Ph.D. recipients reported in the AJAE after 1985. Analysis for earlier periods indicated that practically all of the expansion in the total number of Ph.D. degrees between the early 1960's and the mid 1970's was attributable to an increase in the number of foreign students with little change thereafter through the early 1980's. Schrimper (1985). Gempesaw and Elterich reported that a survey of 54 agricultural economics departments in 1986 indicated that almost 49 percent of the doctoral students were foreign, but the proportion was projected to decrease over the next two years. NRC data indicate the proportion of Ph.D. degrees in agricultural economics received by noncitizens of the U. S. increased from 54 to 68 percent between 1990 and 1994. For 1995, the proportion was a little lower at 57 percent. Zepeda and Marchant indicate that the proportion of international Ph.D. recipients per department increased from a little over 40 percent to approximately 65 percent between 1988/89 and 1993/94 and then decreased during the ensuing two years.[7] These bits of information in conjunction with the relative stability in the total number of degrees over the last decade or so suggest that additional international students may have offset some decreases in the number of domestic students. Domestic students may have responded to perceived market opportunities in the late 1980's when admission and enrollment decisions affecting the number of degree recipients in the early 1990's were made. This means

[7]Changes in the average proportion of foreign students enrolled in the Ph.D. programs per department may not necessarily be an accurate estimator of the proportion for the entire market because of differences in the composition of institutions in the various surveys and variation in size of graduate programs among institutions.

that Ph.D. output has become less concentrated as more institutions developed new programs and expanded graduate opportunities in agricultural economics.

The ten institutions with the largest number of Ph.D. degrees in agricultural economics between 1985 and 1994 accounted for 45 percent of total output. This is a smaller proportion than for any of the periods reported in earlier work. For example, Nichols reported that the top ten universities accounted for 83 percent of all Ph.D. degrees in agricultural economics in 1952-58.

The ranking of individual institutions by the total number of Ph.D. degrees awarded in agricultural economics has fluctuated over time but the set of ten institutions with the largest outputs has been relatively consistent over the last 35 years. Some changes in the composition in the "top ten" lists have occurred, but not many. For example, Berkeley and Oklahoma State reappear on the 1985-1994 list in place of Ohio State and Wisconsin that were among the ten institutions with the largest outputs for 1981-1983. Texas A & M has consistently appeared in the list of the ten institutions with the largest number of Ph.D. degrees in agricultural economics after the mid 1970's, but was not among the ten largest programs prior to then. On the other hand, Missouri and Chicago are two institutions that dropped off the top-ten list after having been among the larger producers of Ph.D. graduates in agricultural economics in the 1960's.

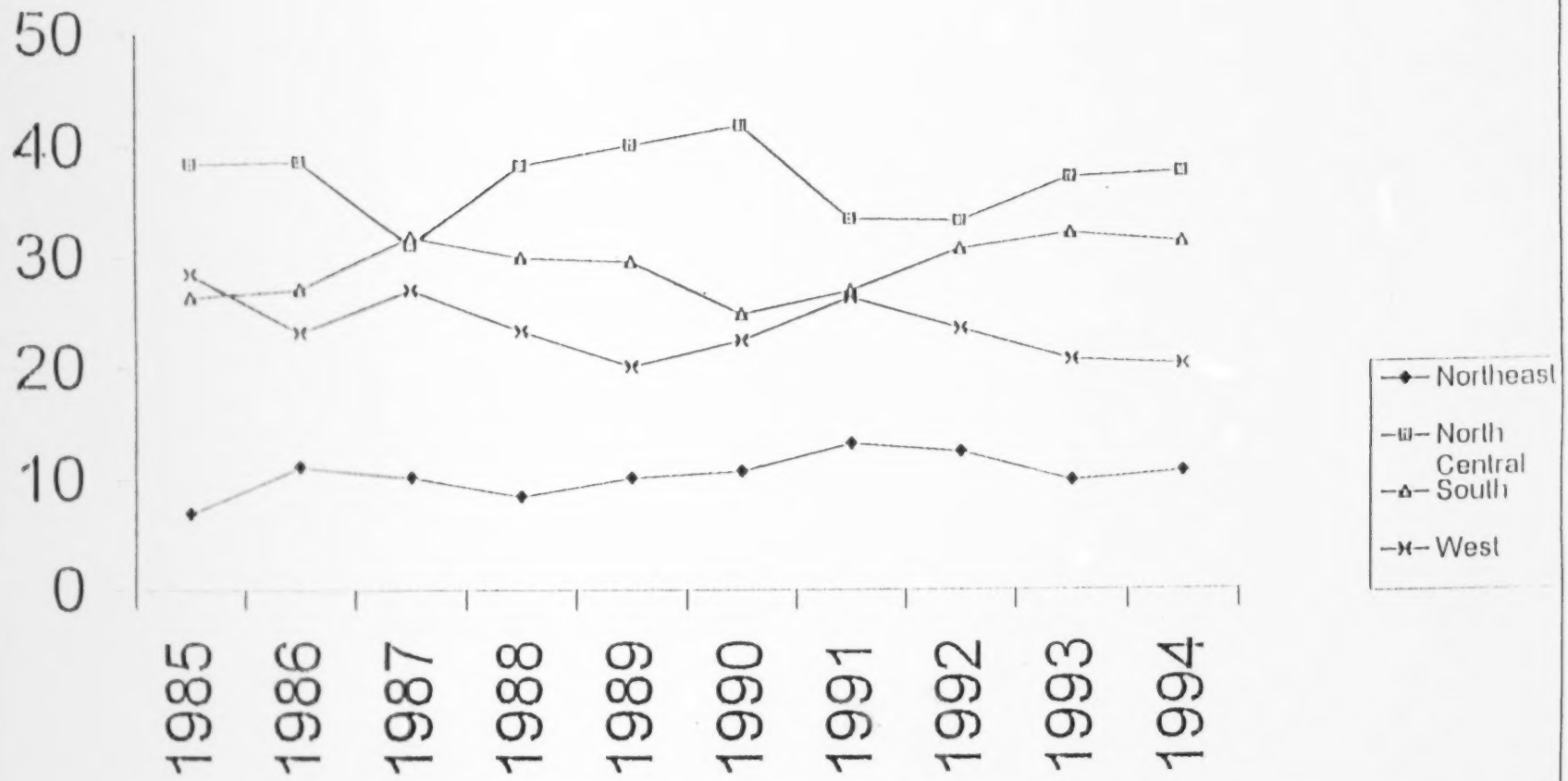
The data in Table 1 indicate that the South and Northeast regions increased their shares of Ph.D. output between 1985 and 1994, whereas the West experienced a slight decline (Figure 2). The North Central region continued to be the dominant area granting 37 percent of the total Ph.D. degrees in agricultural economics in the United States. The Southern region accounted for just under 30 percent of the total output of Ph.D. degrees in agricultural economics. The average

shares for the Western and Northeastern regions for the 1985-1994 period were 23 and 10 percent, respectively.

AAEA Membership. Less than one third of the 1745 individuals who received a Ph.D. in agricultural economics in the U. S. between 1985 and 1994 belonged to the AAEA in 1995 (Table 1). This proportion is almost identical to the proportion of graduate student members who continue their AAEA membership after receiving a degree reported by Buse. There does not appear to be any direct relationship between AAEA membership and year of degree among the ten cohorts between 1985 and 1994. For example, the proportion of graduates who were AAEA members increased from 28 to 36 percent between the 1987 and 1990 classes. For some of the more recent cohorts, the proportion declined slightly.

The percentage of graduates who were members of the AAEA varied considerably among institutions and regions. Maryland had the highest proportion of membership among the 37 schools with 58 percent of their 19 recent Ph.D. recipients being AAEA members in 1995. Massachusetts and Yale were the only two institutions with no AAEA members among recent Ph.D. graduates. Other schools with low AAEA membership rates among recent graduates were Nebraska and Hawaii. The membership proportions were a little higher for the North Central and West than for the other two regions. Only 26 percent of recent Ph.D. recipients in agricultural economics from Southern institutions were AAEA members. Some of the differences among schools and regions may be related to differences in the proportions of international students enrolled.

Figure 2. Regional shares of Ph. D. output in agricultural economics, 1985-1994.



A small positive and significant relationship between percent of AAEA membership and the number of Ph.D. degrees awarded was verified by the following regression based on the 37 observations from Table 1.

$M = 18 + .21S$ where

M = percent of 1985-1994 Ph.D. graduates who were AAEA members in 1995,

S = total number of Ph.D. graduates between 1985 and 1994.

The regression results indicated that AAEA membership was approximately one percent higher for each additional 5 graduates although size of program explained only 23 percent of the variation in membership proportions. The t value for the coefficient of S was 3.22.

Kinds of Employment. Nine of every ten recent recipients of Ph.D. degrees in agricultural economics who were members of the AAEA in 1995 and residing in the U. S. were employed by an academic or governmental agency (Table 2). Even though this proportion is based only on those who were AAEA members, it is almost identical to the share of academic and government employment opportunities obtained from a survey of Agricultural Economics departments reported by Brandt and Ahearn in 1990. Their results indicated that 50 to 60 percent of domestic students who received a Ph.D. during the three years prior to 1990 were placed in academic positions and 25-30 percent obtained government employment. On the other hand, Zepeda and Marchant results indicated that academic institutions hire about one-third of all agricultural economics Ph.D. recipients and ten percent or less are hired by governments. One reason for the differences in the proportions in the latter two reports is that placement experience of domestic students is considered in one case while the other report summarizes the type of jobs taken by all students.

Table 2. Distribution of new Ph.D. recipients in agricultural economics who were AAEA members in 1995 by residence and type of employment.

Year of Degree	Percent Distribution by Type of Employment of Those in U. S.					Percent Living Out of U. S
	Academic Positions	USDA	Other Govt. Agencies	Private Firms	Not Known	
1985	82.2	8.8	4.4	4.4	0	21.1
1986	68.8	8.3	12.5	10.4	0	12.7
1987	58.3	19.5	5.6	8.3	8.3	12.2
1988	60.1	17.1	9.7	9.7	2.4	8.9
1989	74.5	10.6	2.1	8.5	4.3	21.7
1990	76.7	11.6	4.7	4.7	2.3	28.3
1991	79.1	7.0	11.6	2.3	0	24.6
1992	66.7	7.7	10.2	12.8	2.6	25.0
1993	83.3	2.8	11.1	0	2.8	33.3
1994	76.9	0	13.5	0	9.6	22.4
Averages	73.0	9.1	8.6	6.0	3.3	23.1

The proportion of 1985-1994 Ph.D. recipients in agricultural economics with academic appointments varied from a low of 58 percent for 1987 graduates to a high of 83.3 percent for 1993. The academic share of the U. S. market decreased some between 1985 and 1987, but then increased until 1991. The decrease in the academic share of the market in 1992 was offset by an unusually large proportion being employed by private firms. The academic market shares rebounded for 1993 and 1994 and were greater than the average proportion for the entire ten-year period. A larger than normal share of 1994 graduates did not have any employment information listed in the 1995 AAEA Directory. This may indicate that a number of new graduates had not started new jobs or were still searching for employment when the information for the directory was collected.

The USDA accounted for the largest proportions of total governmental employment opportunities from 1987 to 1990. After 1990 the proportion of graduates hired by the USDA decreased, but the share employed by other federal and state agencies increased. The decreasing share of USDA employment is consistent with downsizing of the Economic Research Service and some other agencies in USDA in recent years. The data indicate the ability of agricultural economists to find employment in governmental agencies other than USDA.

Private firms employed only six percent of the recent Ph.D. graduates who were members of the AAEA and residing in the U.S. in 1995. Except for 1992, the proportion of Ph.D. graduates employed by private firms generally tended to be smaller for more recent graduates than for those who graduated earlier. This pattern could be the result of gravitation towards private employment by individuals who accept an academic or government position immediately after completing their graduate program. This hypothesis could not be tested because the AAEA

Directory does not provide a complete work history. The small and somewhat downward trend in the proportions of recent graduates with private employment is not consistent with the expectations of respondents to Brandt and Ahearn's 1990 survey who projected industry employment of Ph. D's in agricultural economics to double between 1985 and 1995. It is not possible to determine if the small proportions of graduates with nonacademic or nongovernmental employment in the AAEA Directory accurately reflects the size of this market for Ph.D. graduates in agricultural economics or indicates that AAEA membership is not very appealing to individuals employed in the private sector.

Information in Table 2 indicates that 23 percent of the 1995 AAEA members who received a Ph.D. in agricultural economics from a U. S. institution between 1985 and 1994 were residing outside the U. S. This proportion varied from a low of 8.9 percent for those completing their degree in 1988 to 33.3. percent for 1993 graduates. A higher proportion of recent graduates residing outside the U. S. maintained their AAEA membership than those who had been working for longer periods of time. This pattern may be the result of changes in foreign vs. domestic employment opportunities or an increasing proportion of international graduates in the 1990's.

Institutional Placement. Information for each of the 37 U. S. institutions regarding the location and employment status for their Ph.D. graduates in agricultural economics between 1985 and 1994 is provided in Table 3. Graduates from Berkeley, Davis and Texas A & M accounted for nearly one quarter of the total academic positions held by 1985-94 Ph.D. recipients residing in the U. S. who were AAEA members in 1995. These three schools were the only ones that had 20

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or more of their 1985-1994 Ph.D. graduates with academic positions in the U. S and listed in the 1995 AAEA Directory.[8]

One third of the USDA positions included in Table 3 were held by graduates from NCSU, Minnesota and Purdue. Cornell, Oklahoma State, Berkeley and Davis had the next largest number of recent graduates who were AAEA members holding USDA positions. These seven institutions accounted for approximately 60 of the 1985-94 Ph.D. graduates hired by the USDA and were included in the 1995 AAEA directory.

Maryland, Minnesota and Stanford accounted for nearly one-half of the recent graduates who were members of the AAEA and employed by governmental agencies other than USDA. The major producer of recent Ph.D. graduates listed in the AAEA Directory employed by private firms was Iowa State with seven out of the total 26 positions. The next highest was Cornell with three graduates.

Iowa State, Cornell, Minnesota, and Berkeley had the largest number of recent Ph.D. recipients who were not residing in the U.S. but maintained membership in the AAEA. These four schools accounted for nearly one-third of recent Ph.D. graduates who were members of the AAEA, but not living in the U.S. It was not possible to sort out how many of these observations were domestic students on international work assignments vs. international students who may have returned to their home country upon completion of their graduate degrees.

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[8]All of the Ph.D. graduates between 1985 and 1994 from Auburn, Clemson, Connecticut, Kansas State, Kentucky, Tennessee, and Texas Tech who were 1995 AAEA members residing in the U. S. reported academic positions. In each of the latter cases, however, there were five or fewer observations, some of which resulted because of low proportions of AAEA membership reported in Table 1.

Table 3. Location and employment characteristics of 1985-94 Ph.D. recipients in agricultural economics who were AAEA members in 1995.

Region/ School	Type of Employment for Those in U. S.					Out of U. S.	Total in U. S.	Total Members
	Academic Positions	USDA	Other Govt. Agencies	Private Firms	Not Known			
Northeast	**22**	**4**	**8**	**4**	**0**	**17**	**38**	**55**
Cornell	11	3	0	3	0	10	17	27
Maryland	2	1	6	0	0	2	9	11
Rhode Island	2	0	0	1	0	1	3	4
Connecticut	5	0	0	0	0	0	5	5
Penn State	2	0	2	0	0	4	4	8
Massachusetts	0	0	0	0	0	0	0	0
Yale	0	0	0	0	0	0	0	0
North Central	**123**	**14**	**16**	**13**	**4**	**63**	**170**	**233**
Iowa State	19	2	2	7	0	13	30	43
Minnesota	19	4	6	0	1	10	30	40
Michigan State	21	0	4	0	1	9	26	35
Illinois	20	2	0	1	0	9	23	32
Purdue	14	4	1	2	1	7	22	29
Ohio State	13	0	1	0	0	9	14	23
Wisconsin	9	0	2	2	1	5	14	19
Missouri	5	1	0	1	0	1	7	8
Nebraska	0	1	0	0	0	0	1	1
Kansas State	3	0	0	0	0	0	3	3
South	**88**	**12**	**3**	**3**	**5**	**23**	**111**	**134**
Texas A & M	24	3	2	1	2	4	32	36
Oklahoma State	5	1	0	0	1	4	7	11
NCSU	17	5	0	0	0	4	22	26
Florida	7	1	0	2	1	3	11	14
Mississippi State	6	0	0	0	1	0	7	7
VPI	12	0	0	0	0	0	12	12
Kentucky	5	0	0	0	0	2	5	7
Georgia	0	2	1	0	0	2	3	5
Clemson	4	0	0	0	0	0	4	4
Tennessee	3	0	0	0	0	1	3	4
Auburn	2	0	0	0	0	3	2	5
Texas Tech	3	0	0	0	0	0	3	3
West	**81**	**9**	**10**	**6**	**5**	**26**	**111**	**137**
Berkeley	25	3	1	0	0	10	29	39
Davis	26	3	1	1	2	3	33	36
Stanford	5	1	6	1	0	3	13	16
Washington State	10	1	0	1	0	2	12	14
Oregon State	6	1	0	2	2	5	11	16
Hawaii	0	0	1	0	0	2	1	3
Colorado State	7	0	1	0	1	1	9	10
Utah State	2	0	0	1	0	0	3	3
US Total	**314**	**39**	**37**	**26**	**14**	**129**	**430**	**559**

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The placement distribution for the ten programs with the largest number of graduates hired by academic institutions in the U. S. is presented in Table 4. These ten schools accounted for 198 or nearly two-thirds of the total academic placement of all 314 individuals from the 37 programs listed in Table 3. Eight of the ten institutions included in Table 4 were among the ten institutions with the largest total output of Ph.D. graduates in agricultural economics between 1985 and 1994. The two changes involve NCSU and Ohio State being included in Table 4 in place of Cornell and Oklahoma State that had a larger number of total graduates, but fewer academic placements. Thirty two of the 37 Ph.D. granting institutions employed one or more graduates from the ten programs listed in Table 4.[9] The 32 hiring schools accounted for approximately 75 percent of the academic appointments from the ten schools. Davis, Berkeley, and Illinois had a larger number of Ph.D. graduates who migrated to other regions for employment than hired by institutions within the same region. The South attracted a number of the Ph.D. graduates from the latter three schools. Academic placement for the other seven programs tended to have a greater number of graduates who stayed in the same region where they received their degree. Some regional totals were increased considerably by a large number of graduates being employed by the same institution where they received their Ph.D degree. This was especially the case for Texas A & M, Michigan State and Ohio State.

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[9]Massachusetts, Yale, Clemson, Texas Tech and Utah State apparently had not hired any new Ph.D. graduates from any of the ten schools with the largest number of academic placements who were members of the AAEA in 1995.

Table 4. Academic placements of graduates from ten Ph.D. programs with most academic placements, 1985-1994.

	Ph. D. Granting Institution									
Hiring institution	Davis	Berkeley	Texas	Mich. State	Illinois	Iowa State	Minn	NCSU	Purdue	Ohio State
Northeast	4	3	1	3	0	0	3	1	0	0
Cornell	2	1	0	1	0	0	2	0	0	0
Maryland	0	1	0	0	0	0	0	1	0	0
Rhode Island	2	0	0	0	0	0	0	0	0	0
Connecticut	0	1	0	0	0	0	0	0	0	0
Penn State	0	0	1	2	0	0	1	0	0	0
North Central	5	4	1	10	5	9	6	5	7	9
Iowa State	0	3	0	0	0	3	2	2	0	0
Michigan State	0	0	1	8	0	1	2	1	0	1
Illinois	0	0	0	1	2	0	0	0	1	2
Purdue	2	0	0	0	0	1	0	0	1	0
Ohio State	0	0	0	0	1	0	0	0	1	6
Wisconsin	1	0	0	0	2	0	0	0	1	0
Missouri	1	0	0	0	0	1	0	0	0	0
Nebraska	0	0	0	0	0	0	1	0	0	0
Kansas State	0	0	0	0	0	2	0	2	3	0
South	8	5	18	3	8	2	3	5	3	2
Texas A&M	1	2	8	1	2	0	0	0	0	0
Oklahoma State	0	0	1	0	3	1	0	0	0	0
NCSU	0	2	0	0	1	0	1	3	1	0
Florida	1	0	1	1	0	0	1	0	1	0
Mississippi State	0	0	1	0	0	0	0	0	0	0
VPI	0	0	0	0	0	0	1	0	1	0
Kentucky	1	0	0	1	0	0	0	0	0	0
Georgia	3	1	1	0	2	0	0	0	0	2
Tennessee	2	0	3	0	0	0	0	2	0	0
Auburn	0	0	2	0	0	1	0	0	0	0
West	5	4	1	2	0	2	0	0	1	1
Berkeley	0	2	0	0	0	0	0	0	0	0
Davis	3	0	0	1	0	0	0	0	1	0
Stanford	0	1	0	0	0	0	0	0	0	0
Washington State	0	0	0	0	0	2	0	0	0	1
Oregon State	2	0	1	0	0	0	0	0	0	0
Hawaii	0	1	0	0	0	0	0	0	0	0
Colorado State	0	0	0	1	0	0	0	0	0	0
Other U. S. schools	4	9	4	3	7	6	7	6	3	1
Total	26	25	24	21	20	19	19	17	14	13

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Summary and Conclusions

The results of this analysis indicate that the number of Ph.D. degrees in agricultural economics awarded by U. S. institutions has not shown any dramatic growth or decline over the last couple of decades. Some fluctuations in output have occurred, but an average of 175 Ph.D. graduates per year between 1985 and 1994 is a little less than the rate during 1981-83, but about the same rate of output as during 1978-1981. Clearly Ph.D. output per department has not doubled over the last decade as suggested by Zepeda and Marchant or declined since the mid 1970's as suggested by Brandt and Ahearn. The largest number of Ph.D. degrees in agricultural economics in some time were awarded in 1994, but the output in 1995, 1996 and 1997 appear to be more typical of what occurred for most of the previous decade. The relative stability in Ph.D. output is especially striking in view of the perceived downsizing of many academic departments and the Economic Research Service during this period of time. Some of the relative stability in Ph.D. output appears to have resulted from an increase in the proportion of international students.

The production of Ph.D. degrees in agricultural economics in the U. S. has become a less concentrated industry over time. The largest ten programs accounted for only 45 percent of total output in 1985-1994 compared to over eighty percent in the 1950's. The list of the largest ten programs has remained relatively consistent over time, but some changes in composition and rankings have occurred.

The fact that less than one-third of the new Ph.D. graduates in agricultural economics were members of the AAEA in 1995 is especially interesting in view of concern about the decreases in membership in recent years. Efforts to increase the number of Ph.D. graduates to become and remain members in the AAEA may be a useful way to increase membership. Some

special incentives for new Ph.D. graduates might be a way of increasing AAEA membership. The extent to which membership among new Ph.D. graduates is low because a high fraction of the degrees are earned by international students who leave the U. S. after completing graduate school is not known. Approximately one-fourth of AAEA members who received a Ph.D. in agricultural economics in the U. S. between 1985 and 1994 were living outside the U. S. in 1995. The proportion of membership among the various cohorts of graduates between 1985 and 1994 was relatively stable indicating no decrease in membership among older graduates. The proportion of AAEA membership tended to be a little greater among larger sized programs.

Around 90 percent of the recent Ph.D. degrees in agricultural economics who were residing in the U. S. and members of the AAEA were employed by academic or government agencies. This suggests either there were not many other kinds of employment opportunities for professional agricultural economists or those in other kinds of work were not very interested in the AAEA. The proportion of graduates reporting academic positions varied from 58 to 83 percent among the different cohorts of graduates, but no particular trend was noticeable. The proportion employed by the USDA definitely decreased after 1990, but the proportion employed by other federal or state agencies increased. The ten institutions with the largest number of graduates who were members of the AAEA in academic positions in the U. S. accounted for approximately two-thirds of the total academic placements. Three-fourths of the U. S. academic market for these ten institutions was distributed among 32 of the 37 Ph.D. granting institutions. Academic placement tended to be a little more concentrated among Ph.D. granting schools within regions than across regions. A larger number of graduates from Davis, Berkeley and Illinois, however migrated to Ph.D. granting institutions outside their region than the number employed by institutions within their region.

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